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NORTHERN ROCKY MOUNTAIN
FOREST AND RANGE EXPERIMENT STATION

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OVERGRAZING INCREASES PRODUCTION COSTS BY REDUCING NUMBER AND WEIGHT OF RANGE CALVES

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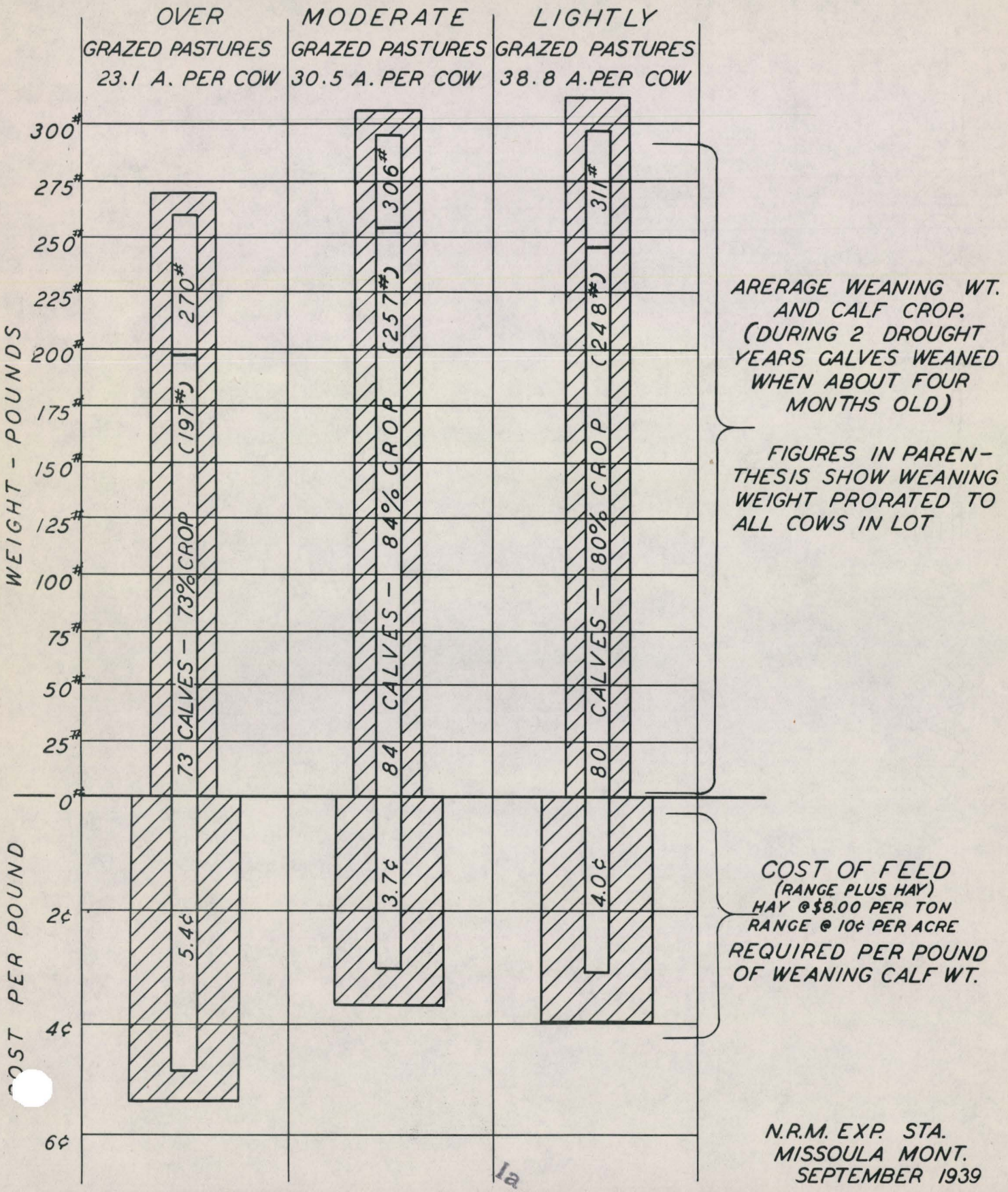
Overgrazing increases feed costs of producing range calves by more than one-third when compared to production costs on adjacent range grazed more conservatively. This is the result from a range experiment at Miles City, Montana, conducted over a 5-year period by this station in cooperation with the Montana Agricultural Experiment Station and the Bureau of Animal Industry. This experiment was started in 1933 on typical shortgrass range pastures on which blue grama, bluestem wheatgrass, niggerwool and buffalo grass predominated. The object was to find the best range utilization and management practices for such ranges. The experimental area was subdivided into three portions each grazed at a different degree or intensity of use - overgrazed 23.1, moderately grazed 30.5, and lightly grazed 38.8 acres per head, respectively, by three groups of 20 breeding cows and their calves. High grade Hereford cows of uniform age and breeding were selected for this test and grazed on the three adjacent sets of native range pastures. More supplemental feed in the form of hay was required for cows on the small pastures, otherwise the breeding, care, and other factors were the same for all lots.

Mainly as a result of the extreme drought during the 1934 and 1936 seasons, the density of vegetation on representative quadrats in all pastures had by early 1937 declined uniformly to approximately 10 percent of the 1933 density level. As a result of quite favorable weather during two successive growing seasons of 1938 and 1939, there has been a substantial increase from this low point, but the total density is still somewhat below the predrought level of 1933. Fortunately, there has been an unusual height growth of the drought-thinned grasses during the past two favorable seasons which has partially compensated in volume production for reduced density.

WEANING WEIGHTS & FEED COSTS

AVERAGE WT. CALVES - 5 YEARS

INTENSITY OF RANGE USE


OVER GRAZED PASTURES 23.1 A. PER COW
MODERATE GRAZED PASTURES 30.5 A. PER COW
LIGHTLY GRAZED PASTURES 38.8 A. PER COW
WEIGHT - POUNDS
300#
275#
250#
225#
200#
175#
150#
125#
100#
75#
50#
25#
0#
73 CALVES - 73% CROP (197#) 270#
84 CALVES - 84% CROP (257#) 306#
80 CALVES - 80% CROP (248#) 311#
COST PER POUND
2¢
4¢
6¢
5.4¢
3.7¢
4.0¢
AREAGE WEANING WT. AND CALF CROP. (DURING 2 DROUGHT YEARS CALVES WEANED WHEN ABOUT FOUR MONTHS OLD)
FIGURES IN PARENTHESIS SHOW WEANING WEIGHT PRORATED TO ALL COWS IN LOT
COST OF FEED (RANGE PLUS HAY) HAY @ $8.00 PER TON RANGE @ 10¢ PER ACRE REQUIRED PER POUND OF WEANING CALF WT.

N.R.M. EXP. STA.
MISSOULA MONT.
SEPTEMBER 1939

The decline and subsequent increase in density of range forage was not, during the first five years, significantly different under the three intensities of grazing. This is readily explained by the fact that extreme drought in 1934 and 1936 completely overshadowed the effects of different degrees of use during the first stage of the experiment. The experiment will continue to follow trends of vegetation and response of cattle to intensity of grazing for several years.

Despite the uniform trends of forage density under these three intensities of grazing, the penalty exacted by overgrazing has been consistently evident from the beginning in the form of lower calf crops and lighter weaning calves on overgrazed as compared to more conservatively grazed ranges. During the 5-year period of this experiment, the 20 cows in each lot produced 73, 84, and 80 weaning calves that weighed 19,710; 25,704 and 24,880 pounds on overgrazed, moderately grazed, and lightly grazed range respectively. When prorated to all of the 20 cows of each lot, this amounts to more than 50 pounds of additional calf weight annually for each cow on the moderately and lightly grazed pastures over and above weights on the overgrazed pastures. The average calf crop, weaning weight, and the average production per cow (including dry cows), as well as the average feed cost per pound of weaning calf weight produced by each lot, are compared on the attached chart.

Attention is directed to the comparative feed costs shown by the bottom section of this chart. Because the cows on overgrazed ranges had to be fed greater amounts of hay, the cost of feed for each pound of weaning calf weight was increased to 5.4 cents per pound or more than one-third above that on either the moderately or lightly grazed lots. This is not all. The lighter calves from the overgrazed lot had a lower market value per pound. Furthermore, the cows of this lot were also thinner and sold for less when replacements were necessary. Thus the range operator who by heavy grazing reduces his calf production by 50 pounds or more per breeding cow, and at the same time is forced to feed more expensive hay to supplement cheap but inadequate range forage, places himself under nearly a hopeless handicap of increased feed cost and greater risks that tend to prevent profitable production.

Even though the density of vegetation on these ranges was reduced uniformly by the drought, the economic fallacy of overgrazing is clearly seen from the calf production data. It is anticipated that the penalty of overgrazing will be accentuated as the effects of overgrazing become significant, as is almost inevitable over a longer period of years. Such overuse usually results in accelerated run-off and erosion as well as cumulative range deterioration. Such a range practice thus leads into a vicious circle of higher costs and reduced returns.

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